

## INJECTION CATHETER WITH NEEDLE ELECTRODE

### 5 ABSTRACT

10 An injection catheter for infusing therapeutic and diagnostic agents into the heart is provided. The injection catheter comprises a catheter body comprising a flexible tubing having proximal and distal ends and at least one lumen therethrough. A tip section comprising a flexible tubing having proximal and distal ends is mounted at the distal end of the catheter body. A  
15 needle control handle is provided at the proximal end of the catheter body. An injection needle extends through the tip section, catheter body, and needle control handle and has a proximal end attached to the needle control handle and a distal end within the tip section. The injection needle is longitudinally slidable within the tip section so that its distal end can extend beyond the distal end of the tip section upon suitable manipulation of the needle control handle. The catheter  
20 further comprises an electrode lead wire having a first end electrically connected to the injection needle and a second end electrically connected to a suitable monitoring apparatus or to a source of ablation energy. The injection needle can thus be used for mapping or ablation in addition to introducing therapeutic and diagnostic agents into the heart.

25 KMO/nml

NML PAS260882.1-\* -11/13/00 3:47 PM